

**TABLE V-11. SHORT-TERM EXPOSURE EPIDEMIOLOGICAL STUDIES OF MORTALITY USING OPTICAL FINE PARTICLE INDICATORS\***

City	Study Years	Indicator	Reference
<b>Acute Mortality</b>			
London	1963-1972, winters 1965-1972, winters	BS	Thurston et al., 1989 Ito et al., 1993
Athens	1975-1987 July, 1987 1984-1988	BS	Katsouyanni et al., 1990 Katsouyanni et al., 1993 Touloumi et al., 1994
Los Angeles	1970-1979 1970-1979	KM	Shumway et al., 1988 Kinney and Ozkaynak, 1991
Santa Clara	1980-1986, winters	COH	Fairley, 1990

\*BS, KM, COH are optical measurements that are most directly related to elemental carbon concentrations, but only indirectly to mass (See Appendix B). Site specific calibrations and/or comparisons of such optical measurements with gravimetric mass measurements in the same time and city are needed to make inferences about particle mass. Both the nature of the monitor inlet and the fact that elemental carbon particles are found in the fine fraction mean such measurements reflect variations in fine particle mass (if calibrated) or in that portion of fine particles indexed by elemental carbon (largely primary combustion particles). Comparisons between the respective optical measurements and mass measurements were made for the historical London winters (EPA, 1982a), the Athens studies (Katsouyanni et al., 1995), and Santa Clara (Fairly, 1990). Such comparisons were not reported for the Los Angeles study using KM, but the same investigators also reported significant associations between mortality and PM gravimetric mass in Los Angeles (Kinney et al., 1995).